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ABSTRACT

The Carnegie Foundation commissioned a collection of essays as part of the Carnegie Initiative on the Doctorate (CID). Essays and essayists represent six disciplines that are part of the CID: chemistry, education, English, history, mathematics, and neuroscience. Intended to engender conversation about the conceptual foundation of doctoral education, the essays are intended as a starting point and not the last word in disciplinary discussions. The purpose of this paper is to speculate on the essential goals and characteristics of a doctorate in education that is designed to develop persons who are stewards of their field. As described by the Carnegie Foundation for the Advancement of Teaching, stewards are able to generate new knowledge, understand the intellectual history of the field, use the best ideas and practices in current work, and represent that knowledge to others both within and outside the field. Stewards have a respectful sense of the broader intellectual landscape, including paradigms and questions, and they are able to speak about how their field contributes important understanding to these larger questions. They have a strong sense of obligation to their field and help preserve the best while promoting change and improvement. This paper discusses the steward of education, and the role of doctoral programs in fostering stewards of education. There are two doctoral degrees in education, the Ph.D., and the Ed.D. Although the paper focuses on the Ph.D. degree, the overarching frame of the analysis applies to both degrees. (EV)

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CARNEGIE ESSAYS ON THE DOCTORATE

EDUCATION

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THE PH.D. IN EDUCATION

ED 481 567

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The Carnegie Foundation commissioned a collection of essays as part of the Carnegie Initiative on the Doctorate (CID). Essays and essayists represent six disciplines that are part of the CID: chemistry, education, English, history, mathematics and neuroscience. Intended to engender conversation about the conceptual foundation of doctoral education, the essays are a starting point and not the last word in disciplinary discussions. Those faculty members, students, and administrators who work in the discipline are the primary, among multiple, audiences for each of these essays.

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INTRODUCTION

The purpose of this paper is to speculate on the essential goals and characteristics of a doctorate in education that is designed to develop persons who are stewards of their field. As described by the Carnegie Foundation for the Advancement of Teaching, stewards are able to generate new knowledge, understand the intellectual history of the field, use the best ideas and practices in current work, and represent that knowledge to others both within and outside the field. Stewards have a respectful sense of the broader intellectual landscape, including paradigms and questions, and they are able to speak about how their field contributes important understanding to these larger questions. They have a strong sense of obligation to their field and help preserve the best while promoting change and improvement. This paper discusses the steward of education, and the role of doctoral programs in fostering stewards of education.

There are two doctoral degrees in Education, the Ph.D., and the Ed.D. Although I focus on the Ph.D. degree, the overarching frame of this analysis applies to both degrees.

EDUCATION AS AN ENTERPRISE AND FIELD OF STUDY

A fundamental characteristic of education differentiates it from other disciplines, thereby suggesting that the Ph.D. degree might also differ. The term "education" stands for both the study of the field, and for the formal enterprise or system that is being studied. To understand this dual meaning, consider two definitions of "education." The first is a standard definition from the American Heritage Dictionary:

1) The act or process of educating or being educated; 2) The knowledge or skill obtained or developed by a learning process; 3) A program of instruction of a specified kind or level; 4) The field of study that is concerned with the pedagogy of teaching and learning; 5) An instructive or enlightening experience. (p. 586)

The second is from the essay on "Education" by William Frankena in the four-volume Dictionary of the History of Ideas:

1) As the activity of the one doing the educating, the act or process of educating or teaching engaged in by the educator; 2) the process or experience of being educated or learning that goes on in the one being educated; 3) as the result produced in the one being educated by the double process of educating and being educated; 4) as the discipline or study of education. (p. 72, Frankena, 1973)

From these definitions, it is clear that education can be viewed either as a field of study and, therefore, a contemplative search for theory and science, or an enterprise that consists of the various systems of education and, therefore, primarily an activity. Viewed through the functions of stewardship of education, the enterprise and its study are linked. A major purpose of education as a field of study is to help to understand and improve the enterprise. As an activity, the education enterprise is highly complex. Its immediate purposes relate to the intellectual, moral, social, and physical development of our students and it functions, socially and civically, to maintain and improve a democratic way of life. Such complexity, with competing goals and values, requires strong analytic thinking and understandings in order that the system is operated in a thoughtful and effective way. The Ph.D. program should be designed to prepare scholars who can provide normative as well as epistemic theory, research,

and analysis in ways that place discussions about the enterprise in frameworks that are both analytic and morally defensible. The Ph.D. degree, then, should denote a steward who is responsible for both the field of educational study as well as the education enterprise.

EDUCATION AS A DISCIPLINE

There are serious questions as to whether education can be called a discipline, and there are three schools of thought on the subject. The first suggests that since education borrows from and combines with other more traditional disciplines and often focuses on practice, it should not be called a discipline, but a field of study or a second level discipline. Using the same rationale – that many areas within education bring together a traditional discipline within an educational frame – the second school of thought calls education an "inter-discipline." And, because education has its own set of problems, questions, knowledge bases, and approaches to inquiry, a third school of thought pushes for accepting education as a discipline.

One reason that there is a lack of consensus around the use of "discipline" for education is that, as a field of study, education may be seen as one of a set of academic program anomalies in which the enterprise, itself, is primarily an activity. Within universities, this includes schools and colleges that are considered "professional schools": engineering, nursing, medicine, law, social work. We could say that education, as a professional school, is a second level discipline in that it focuses on a unique activity – education – by borrowing, considerably, from many other traditional disciplines.

Looking specifically at areas in education that bring together a traditional discipline and education, we could use the term "inter-discipline" to describe education. Considering education as an inter-discipline suggests that the work of scholarship in education should focus on bringing together disciplines as "a means of solving problems and answering questions that cannot be satisfactorily addressed using single methods or approaches" (Klein, 1990, p. 196). However, there is often confusion (or at least several disparate approaches) within these inter-disciplines as to the purpose of scholarship that goes on within them. A number of years ago, Fenstermacher and I examined these different notions in the case of educational psychology by examining two quite different purposes in the subfield:

1) . . . educational psychology has as its primary mission contributions to the discipline of psychology through the thoughtful and creative study of education.

2) the primary mission of educational psychology is to advance our understanding of education through the application of the discipline to educational problems. (Fenstermacher and Richardson, 1994, p. 53)

These differences in purposes of the disciplines and education areas have undoubtedly kept education from being viewed as a discipline. At this point, however, it would be well worth examining education as a discipline. Not only does education have its own set of problems, questions, knowledge bases and approaches to inquiry, but that which is borrowed from other disciplines often becomes transformed within the study of education. If education does become accepted as a discipline, however, it exists because of and in relationship to educational practice; the purposes of maintaining the best and allowing change to lead to improvement must always be kept in mind.

PH.D.S IN EDUCATION: STEWARDS OF BOTH A FIELD OF STUDY AND AN ENTERPRISE

Because education is both a field of study and a set of formal and structured actions, stewards of education have two responsibilities.

As stewards of the field of study, Ph.D.s in education generate new knowledge, understand the intellectual history of the field, use the best ideas and practices in current work, and represent that knowledge to others both within and outside the field. Stewards have a respectful sense of the broader intellectual landscape, including paradigms and questions, and are able to speak about how the field can contribute important understanding to these larger questions. They have a sense of obligation to their field in helping preserve the best while promoting change and improvement.

As they work within the enterprise of education, stewards of education have duties related to communicating and engaging in decisions concerning the practice of education. In particular, they communicate normative as well as epistemic theory, research, and analyses to very different audiences so that decisions about the enterprise are made within strong analytic and morally defensible frameworks.

As I discuss in the following sections of this essay, preparing such stewards through Ph.D. programs in education requires attention to the three forms of knowledge and understanding—formal knowledge, practical knowledge and beliefs and misconceptions—that together define the practice of being a steward. For example, in becoming stewards of the enterprise of education, it is useful for Ph.D. students to develop strong communication skills. But in order to do so, students need both to understand the nature of education policy development and educational practice and to generate policy arguments using formal knowledge based on research and scholarship. In addition, Ph.D. students should understand how beliefs and misconceptions based on under-examined experience and the general public's various beliefs about education, in combination with current policy imperatives and the structure and requirements of public positions, lead policy makers to define educational problems and focus on solutions in certain ways. Ph.D. students need to develop and present policy analyses within strong analytic and deep normative theories of the educational systems.

KNOWING AND BELIEVING IN EDUCATION

What are the particular forms of knowledge, understanding, and belief that should be of concern, in different ways, to stewards of education and, therefore, significant elements of the Ph.D. degree? Below, I provide a frame for the types of knowledge addressed in Ph.D. programs. The first form of knowing, I call *formal knowledge* and understanding. It is this variety of knowledge that we think of almost exclusively when we consider the Ph.D. I call the second form of knowing *practical knowledge*, and the third, *beliefs and misconceptions*.

It is important first to differentiate between knowledge and understanding. Without getting deeply into definitions of these terms, I will point out that I am using a philosophical rather than psychological definition of knowledge, particularly in my discussion of formal knowledge. Understanding also means many different things to many different people. Lee Shulman's definition appears to be the one that is quite appropriate to considerations of Ph.D. programs:

> Understanding is the category we spend most of our time as educators worrying about. ... It includes knowledge, and it includes the ability to restate in one's own words the ideas learned from others. . . . In contrast to knowledge and information, understanding connotes a form of ownership." (p. 40)

Formal Knowledge

Formal knowledge requires epistemic warrant that is gained within a discourse community. A discourse community defines the field, conducts the research within it, determines criteria for validity, and helps to mentor and support developing stewards. In considering a doctoral program in education, it is important to understand the organization of formal knowledge within the field.

Organization of Formal Knowledge in Education

One way to think about the organization of formal knowledge in the field of education is by considering the organization of departments, units and programs within universities, and within colleges and schools of education. The journals generally match the way departments and programs are organized, as do the positions that Ph.D.s hold in institutions. For purposes of considering the Ph.D. degree, formal knowledge fields in education that translate into Ph.D. programs or subprograms may be divided into three categories:

Traditional Disciplines/Education: This category includes areas that bring education together with a traditional discipline. These areas include mathematics education, science education, history education, English education, and the foundations areas of philosophy, sociology, history, anthropology of education, and educational psychology. I place two additional areas, social studies education and literacy education in this category, although both include several traditional disciplines within their study. I would also place the research methodology and assessment areas within this category because of their strong relationship to statistics (quantitative), and anthropology and sociology (qualitative).

Special Interest Fields: This category includes programs that have developed a significant scholarly literature and draw on the disciplinary programs but focus on an area of educational practice or a particular student grouping. These areas include policy studies, teacher education, curriculum, educational administration, higher education, special education, and early childhood education.

Cross Disciplinary Programs: These programs are designed to traverse the traditional foundational disciplines, and include such programs as social, cultural and critical studies in education. Over time, should these programs become well established fields of study, they will be called special interest fields or, eventually, traditional disciplines.

Ph.D. students major in one or another of these areas and often minor in another—or sometimes minor in a traditional discipline across campus. As suggested by the description of the organization of education knowledge, the fields do not stand on their own, are often difficult to differentiate from other fields, and do not stand still. For example, it is possible to focus on teacher education within any of the particular education/discipline areas while still seeing oneself as a member of the larger education/discipline area. It is also possible for a student

majoring in teacher education to focus on an education/disciplinary area such as English education.

It is important, then, for the Ph.D. students to acquire a sense of the whole and develop conceptual understandings of the ways these various pieces might fit together in their programs. In order to be stewards of the discipline—in the sense of the word meaning the enterprise—they will require more understanding of the system than their own specialized field of study will provide. Further, having an expansive appreciation of the field will enable the students to understand the place of their field within a broader intellectual context, to work in the future to bring together different fields, and to reconceptualize their own area of the field. Stewards of the field not only participate in shaping formal knowledge and understanding; they also need to have a meta-awareness of the movements, goals, and potential future of the field, so that eventually they can both provide scholarly leadership and help to mentor new Ph.D.s as stewards of the field.

Practical Knowledge

Much of what goes on in a steward's life during and after obtaining a Ph.D. is enhanced by practical knowledge that is systematically subjected to critical reflection. Practical knowledge is gained through experience in practice, and may also be thought of as "knowing how" (Ryle, 1949). Practical knowledge is helpful in many of the activities in which a Ph.D. student will eventually engage, such as teaching, certain research-related activities such as submitting a proposal for funding and managing a research program, operating as an academic within a department and college. The development of practical knowledge can and should begin during the time a student is in a Ph.D. program, and undoubtedly does. However, as many mentors eventually find out, this acquisition often does not happen. In conversations with new Ph.D.s out in the field, it can be quite shocking to discover how little practical knowledge they have picked up in their four or more years in the program.

There are two aspects of this issue that need to be considered in developing a Ph.D. program. The first is that students will develop a limited amount of practical knowledge during the time they are in a Ph.D. program. Thus, it is necessary to understand the importance of the mentoring process for new faculty members; this mentoring is essential in supporting and adjusting the development of the new Ph.D.'s practical knowledge on the job. The second is that developing students' practical knowledge requires attention within the curriculum, broadly defined. That is, it is not enough for a Ph.D. student simply to spend a number of years within a functioning academic unit. They are students and approach their experience as such. Thus, certain learning opportunities that focus on practical knowledge should be consciously structured into the Ph.D. program.

Beliefs and Misconceptions

We have a unique situation in education. Nearly everyone has been a student, and on the basis of that experience, many claim knowledge of the field, perhaps even consider themselves to be experts. They act on unexamined beliefs and understandings that they gained simply through extensive experience as students in the educational system. Their beliefs are deep, strong, and often incorrect—or at least misguided and unworkable. Unfortunately, these beliefs often drive policy and practice in education.

The Ph.D. students likewise enter their programs in education with strong beliefs about the nature of teaching and schooling, often based on their experience in the educational system as students, teachers, and administrators. These experiences are very helpful in the Ph.D. program in bringing constructs and theories together with practice. However, these experiences have often been underexamined, leading to beliefs that have little warrant. For example, consider that educators might enter Ph.D. programs with concerns about the nature of research and its use in education. Although the students might have an interest in engaging in the scholarship of education, because of certain beliefs, they might also be quite ambivalent about the purpose and use of research, or consider that it is really quite worthless. Because of the beliefs and misconceptions that students bring with them, it is important that students have opportunities throughout the time they are involved in the Ph.D. program to explore their beliefs and reflect on alternative conceptions to their sense of both educational scholarship and educational systems.

In exploring their own beliefs, the Ph.D. students should become more cognizant of how unwarranted beliefs and misconceptions develop in others and what it might take for others to change these beliefs. It is this process of examining beliefs in combination with the formal knowledge they have acquired in the program that will place stewards in a position to work with educators, policymakers, legislators, and the public to raise the level of analysis and understanding about education. This is a critical element of their role in the stewardship of the enterprise.

Therefore, Ph.D. programs need to help students not only examine their own beliefs, but also understand how to help others recognize and change theirs. All Ph.D. students should also become acquainted with issues of policy, policy making, and implementation (formal knowledge), and they should learn to communicate (practical knowledge) with those who are passionate about the improvement of education but have little understanding of the complexities of the system and the potential for reform.

EPISTEMOLOGIES AND METHODOLOGIES

Education shares with other fields in the social sciences and many liberal arts considerable turbulence around questions of research methods and approaches. Postmodernism raises questions that jar the very foundations of our research understandings. These questions concern the nature of knowledge, who owns it, who produces it, and how it may be used. Cognitive science, constructivist learning theories, and socio-cultural approaches have strongly affected what we choose to examine, how we examine it, and the very fabric of the education system.

Within education, the tensions between qualitative versus quantitative methodology died down for a while, but they are again strongly present. These tensions, however, are playing out in a quite different arena—Washington, D.C. There has been a strong policy initiative in Washington to bring particular medical research design models to play in education, particularly randomized experiments. In fact, there is at present an effort to require such models within federal funding for research. There are also expressed concerns about the quality of qualitative studies, and much discussion related to criteria for their assessment. While there may have been subtle political involvement in educational research methodology in the past, it is now no longer hidden.

The question of how the politicization of research methodology should or will affect Ph.D. programs is critical. In the recent past, students were expected to become bi- (or tri-) methodological, with strong and deep knowledge and skills in at least one approach. The rationale for this approach is that students would leave their Ph.D. programs equipped with a set of methodological skills and understandings that would allow them to immediately participate in quality educational research. However, because the students would also have an understanding and some skills in other approaches, they would understand in some depth research that employs these other methods and be prepared to conduct mixed-methods studies.

I suggest that the goal of developing depth in one methodological approach and breadth in several other methodological approaches is still viable and desired, although certainly there will probably be somewhat more emphasis placed on randomized experimentation. But perhaps more importantly, an emphasis within the Ph.D. program should be placed on the benefits and limitations of the various methodologies being introduced to the students in terms of the nature and potential use of the knowledge being generated, ethical issues involved in a particular methodology, and the criteria that should be used in judging the quality of the work within the particular methodology. The Ph.D. student should also become aware of the dangers of methodological hegemony, particularly when it emanates from the federal government, and the ways in which academics' efforts often help to exacerbate such situations.

THE PH.D. PROGRAM

The steward of the education discipline, then, is someone who has responsibility toward both the field of study and the enterprise of education. Ph.D. students who are to become stewards of the field will need to develop expertise in normative, epistemic, and rhetorical analysis, research, and representation. They will need depth and breadth, as well as thorough involvement in a disciplinary field. As I did above, I will use the forms of knowing, understanding and believing—formal knowledge, practical knowledge, and beliefs and misconceptions—in describing what the Ph.D. program may include.

Formal Knowledge

One way of considering the nature of what needs to be learned in relation to formal knowledge is to examine a model developed by David Cohen and Deborah Ball for a proposal from the School of Education of the University of Michigan to the Spencer Foundation (Miskel, 1996). A copy of the table they prepared to explain the model appears at the end of this essay. The "Crucial Elements of Scholarly Inquiry and Student Learning," outlines the outcomes of learning the practice of research, the knowledge and skills students develop in their Ph.D. programs, and the habits of mind that the students need to develop. (Note that some of the habits of mind or kinds of understanding and skill appear in more than one place. For example, "seeking and using criticism," and "connecting one's work to that of others" appears several places.)

It is interesting to note that only one of the outcomes groups relates to substantive knowledge of the field. Very often, substantive knowledge outcomes and research methodology skills (appearing in rows five and six of the table) define a particular Ph.D. program and its courses. The four additional outcomes relate to a quite different sense of the field. "Think theoretically and critically," for example, goes well beyond gaining substantive knowledge of the field. This outcome is a type of meta-awareness of the field in relation to others, and it asks students to

understand deeply the nature of different perspectives on the topic. The last group of outcomes, "communicate with various audiences about research," brings in both roles associated with stewards of education: conducting scholarship in the field; and maintaining and improving the enterprise.

The "Crucial Elements" table places a heavy emphasis on knowledge of theories and understanding the differences between conceptual and analytic frameworks and empirical ones. Although the table does not differentiate between descriptive and normative theories, it is clear that both are acknowledged; and understanding descriptive and normative theories and skills in developing both forms are important outcomes. As stewards of the educational enterprise, Ph.D. students will have to develop a sense of "shoulds," and receive the education necessary to analyze and develop such theories. In addition, within their empirical research, they should emphasize theoretical framing and development.

One can also observe in the table a strong call for moral and intellectual virtues to be fostered in the Ph.D. students. These include such virtues as humility, intellectual honesty and integrity, curiosity, and choosing methods without partisan loyalties.

Given the nature of the inter-disciplinarity of Ph.D. programs, the "Crucial Elements" table could be used as a guide in developing programs. For example, if programs were to follow this model, the students focusing in the three organizational areas described above—traditional disciplines/education, special interest, and cross-disciplinary—would probably have quite different required courses and experiences. A student in the traditional disciplines/education might be required to take a minor or cognates across campus in the discipline. This would not necessarily be the case in a special interest field such as teacher education, where the cognates or minors could be taken within the School of Education. On the other hand, for those students in a cross-disciplinary field, the number of required cognates, or the nature of the minor would be quite different. Nonetheless, the "Crucial Elements" table is useful for all three areas of education because it describes skills, knowledge and habits of mind that could be acquired within the three corresponding types of Ph.D. programs. This model also allows a faculty to assess needed courses and experiences on the basis of outcomes needs.

The "Crucial Elements" table focuses on the outcomes of learning; it does not make a statement about the process to achieve these goals. Thus, these outcomes are not meant to map onto specific courses, although "research design" could, in fact be a required course taken by all students. Developing a set of outcomes such as this would provide a strong foundation for a new or revised Ph.D. program, or the assessment of an existing one. It would be important for a faculty, as a collective, to develop and agree upon the nature of the outcomes of its Ph.D. program. With such a tool, it would be possible to determine what and when students are learning these elements in the program as a whole, and to determine what they might be learning in individual classes.

Translating a set of desired outcomes such as those in the "Crucial Elements" table into a Ph.D. program is difficult, and requires experiment. An outcomes box on the table does not translate into a course. These outcomes are learned across the curriculum. Therefore, I recommend two approaches to using such a table in developing and assessing learning outcomes:

- Working within a faculty on an ongoing basis to develop a sense of the courses and experiences that provide opportunities to learn the various learning outcomes;
- Working with the individual students in a program who engage in self-assessment around the learning outcomes. For example, Ph.D. students could use the table to assess their learning in a yearly process in which students provide a written assessment of their progress, using the table as one of the measures. These would be reviewed by the advisor and possibly the program faculty to provide some guidance for the next year's opportunities for the student.

The outcomes called for in the "Crucial Elements" table require a number of approaches to learning, including standard seminars, research internships, tutoring and mentoring, opportunities and support for study groups, educative "hurdles" such as preliminary exams, support for attendance at major conferences, and involvement in research programs. The issues of type, quantity, and timing of these various approaches need to be worked out within a faculty with a strong orientation toward program assessment and improvement.

Practical Knowledge

All practical knowledge that one should learn as an academic cannot be crammed into the Ph.D. program. It is neither realistic nor possible, particularly given that practical knowledge must be acquired through experience. But programs could do a better job of helping students develop some practical knowledge. For example, students' opportunities to learn practical knowledge are often provided on an *ad hoc* basis; it would be helpful if, instead, a certain number of areas of practical knowledge be explicitly attended to in Ph.D. programs. Several candidates are:

- Teaching. Most graduates of Ph.D. programs in education take academic positions that include teaching undergraduate and graduate courses. Recently, more attention is being paid to this role, and Ph.D. students could receive better preparation in teaching and the scholarship of teaching as well. Internships are one way of preparing students, but these should stress critical reflection and not be designed to lead toward imitation. Programs could offer additional courses that inquire into the scholarship of pedagogy in a particular field of study within education.
- Research proposals and management. Many Ph.D. students work within research projects. The topics that are addressed within these research projects should be more systematic and begin to provide students with organized experiences in writing proposals and managing projects.
- Writing for publication. It is useful for students to understand the nature of the various publications in their field from the standpoint of the written genres that are acceptable. It would also be helpful if students could receive formal support in writing for conferences and publication.
- Networking. It is very important for students to begin to get to know academics in their field of interest. This might involve preparing students to attend conferences, meeting well-known figures in their field, and learning norms for communicating with these people.

Beliefs and Misconceptions

Students could have opportunities to explore their beliefs about various aspects of educational systems, teaching, learning, equity, and other topics of significance in the field of study. It is also important to help students who have spent considerable time in the schools as teachers or administrators to learn how to move to a different level of analytic scholarship than the experiential level with which they enter the program.

This exploration could take place in a number of different forums, both formal and informal. For example, within a given program, there could be a professional seminar that helps student examine their beliefs and develop analytic skills to question and examine them. It would also be helpful if the students developed a meta-awareness of the process of examining beliefs so that, in turn, they could learn how to approach others in such an examination. This knowledge would then inform their development of practical knowledge around communication with policy makers, practitioners, and the public about education.

SUMMARY

It is important to prepare Ph.D. students in education as stewards of the discipline who have the three forms of knowledge and understanding as represented in skills, knowledge, and habits of mind described in "Crucial Elements" table. The faculty who develop and manage Ph.D. programs have in front of them a challenging task of socialization and education in preparing stewards. It will require goal-setting, analysis, assessment, and constant vigilance on the part of a Ph.D. faculty if we are to develop Ph.D. graduates who are able both to conduct important, high-quality, useful research on educational practice and issues and provide guidance in improving the education enterprise.

Crucial Elements of Scholarly Inquiry and Student Learning[1]

Outcomes of learning the practice of research	What students need to know and be able to do	Habits of mind students need to develop
1. Have substantive knowledge of the field	• Theories, analytic frameworks, empirical results, ideas of the fields central to one's work • Major controversies or theoretical positions • Historical perspective on a field and its evolution • Understand the nature of particular claims and theories	• Curiosity about how others have thought about an area • Reading partly to get more substance, and partly to identify the growth points of a field • Keep up with developments in the field in and outside one's own area
2. Think theoretically and critically	• Distinguish conceptual/analytic from empirical issues • Understand different theoretical perspectives and what each illuminates and obscures • Read broadly, in other fields, seeking connections that are not at first obvious • Compare across traditions of research and allied philosophical traditions	• Humility to respect prior work; courage to question accumulated wisdom • Awareness of one's own assumptions and disposition to examine those critically • Discriminate between knowledge and belief • Willingness to change one's mind based on argument or evidence
3. Frame fruitful research problems	• Issues in the field: where are there gaps? Unexamined issues? Where is there controversy? Where is something that needs to be challenged? • Literature in related fields • Articulate researchable questions • Formulate hypotheses and hunches • Connect one's work to others' • Identify critical elements of a problem	• Passion for the ideas but dispassion for scholarship (i.e., genuine curiosity or desire to develop a careful analytic contribution to a problem) • Willingness to take intellectual risks

[1] This table, developed by Deborah Ball and David Cohen, was an element of a proposal to the Spencer Foundation from the School of Education of Michigan (Miskel, 1996).

Outcomes of learning the practice of research	What students need to know and be able to do	Habits of mind students need to develop
4. See research as socially situated	• Different people or groups who have worked on related issues • Understand the history of one's research tradition/field • Connect the purposes of their work to the work of others (e.g., challenging, adding, shifting, refuting) • Keep up with the literature • Ground questions in practice as well as theory	• See criticism as contributing to the quality of one's work • View one's work as a contribution to an ongoing conversation • Recognize and use local knowledge in the inquiry process • Sensitive to different discourses in the design, conduct, and communication of research in different settings and with different audiences • See research as part of an ongoing conversation
5. Design research (i.e., join researchable problems to appropriate methods of inquiry)	• Different sources of "data" • Match research questions to kinds of information needed • Different methodological traditions and orientations • Central conceptual constructs, e.g., dependent/independent variables, change, comparison • Different methods of data collection • Conceptually map of aspects of the inquiry, developing of methods to address particular aspects of the map • Create frameworks	• Intellectual honesty and integrity: respect for settings and participants in research, setting up research to investigate, not merely support belief • Seek and use criticism • Choose methods without partisan loyalties, matched instead to intention and question • Seek methods, designs, instruments from others' work
6. Collect and analyze data	• Methods of data analysis • Standards of evidence • Sources of ideas, uses of literature • Write • Use different methods of data analysis	• Openness to surprise • Look for disconfirming evidence, considering alternative interpretations or explanations • Seek criticism • Use of the literature to help develop explanations; balance in such use, neither directly importing others' ideas, nor unnecessary invention

Outcomes of learning the practice of research	What students need to know and be able to do	Habits of mind students need to develop
7. Communicate with various audiences about research	• Different audiences • Different genres and forms (e.g., essay, empirical article, case study, conceptual analysis, etc.) • What constitute "findings" or "products" of particular programs of research • What kinds of claims are being made and what constitutes effective means of presentation and provision of evidence • Writing skills – general and technical • Persuasion and argument • Structuring arguments • Writing precisely and plainly • Participating in oral presentation and debate • Examine the ways in which the research activity is a form of dissemination	• Seek opportunities to present draft analyses or arguments, revise as a result of listeners' reactions • See writing as part of interpretive and analytic work, not merely "writing up" research • Seek criticism • Expectations of revision – that writing and rewriting entailed • Respect for language, caution in introducing new terms, care in creating needed ones • Sensitive to different discourses in the design, conduct, and communication of research in different settings and with different audiences • To see research as contributing to an ongoing conversation

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